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CONNECTICUT
GREEN BANK

Legislative Testimony of the Connecticut Green Bank
Energy and Technology Committee
February 24, 2022

Regarding Senate Bill 92
AN ACT PERMITTING TEN-YEAR CONTRACTUAL PERIODS FOR THE TRANSPORTATION OF SCHOOL CHILDREN IN ZERO-EMISSION SCHOOL BUSES

As the nation's first green bank, the Connecticut Green Bank ("Green Bank") leverages the limited public resources it receives to attract multiples of private investment to scale up clean energy deployment. Since its inception, the Green Bank has mobilized $2.14 billion of investment into Connecticut's clean energy economy at a 7.4 to 1 leverage ratio of private to public funds, supported the creation of 25,612 direct, indirect and induced jobs, reduced the energy burden on over 63,000 families and businesses, deployed over 494 MW of clean renewable energy, helped avoid 9.9 million tons of CO2 emissions over the life of the projects, and generated $107.4 million in individual income, corporate, and sales tax revenues to the State of Connecticut.[1]

The Green Bank **supports Senate Bill 92**

Based on the Green Bank's submission of Senate Bill 92 "An Act Permitting Ten-Year Contractual Periods for the Transportation of School Children in Zero-Emission School Buses" ("the Bill"), the Bill would help encourage the local adoption of electric school buses by expanding – from five years to ten years - the ability to contract zero-emission vehicles for student transportation services.

There are roughly 480,000 school buses serving student transportation in the United States. Less than one percent of them are powered by electricity, although this has been quickly changing. As of December 2021, 354 school districts or fleet operators across 36 states committed on 1,828 e-buses, with 664 (~50%) of that activity in the second half of 2021.[2]

The use of electric propulsion with school bus chasses is at a similar stage in Connecticut. Table 1 depicts vehicle registration data by fuel type (Appendix A details the count by municipality):

Table 1. School Bus Registrations in Connecticut by Fuel Type as of September 30, 2021[3]

Diesel	Flexible Fuel	Propane	Gasoline	CNG	Electric
5818	1013	586	418	52	9
73.68%	12.83%	7.42%	5.29%	0.66%	0.11%

[1] For more up-to-date details on the Green Bank's impact in your community, go to www.ctgreenbank.com/MAYA
[2] https://www.wri.org/insights/where-electric-school-buses-us
[3] Department of Motor Vehicles data compiled by Department of Energy and Environmental Protection.

An additional 43 e-buses replacing diesel counterparts were reported committed as of December 2021.[4] We interpret that this brings the number of e-buses expected soon on CT roads to a count of 52 or a proportion of 0.66% of the 7,896 total registered fleet shown in DMV data.

The largest barrier to scaling deployment of zero-emissions student transport is the cost differential between acquiring diesel buses at $80-90k, and e-buses, which can be triple that cost. Although acquisition costs will come down across this decade, grant fund availability will still play a substantial role in helping create a cost-neutral proposition for fleets.[5] An economic benefit of vehicle electrification is that it creates operational savings compared to traditionally-powered engines, in the form of lower maintenance costs and fuel savings; this can represent nearly $56,000 over an assumed 15-year lifespan.[6] For this reason, aside from public grants, an additional way to take aim at higher upfront costs is to allow for flexibility in the allowable length of bus service contracts.

Student busing in Connecticut is predominantly provided through third-party contracted services, with school districts stipulating terms and service requirements through competitively awarded agreements. Current statute allows such contracts to have maximum tenors of five (5) years. The Green Bank has heard from bus manufacturers, project developers, and municipal staff that a 5-year term is not long enough to effectively integrate the economic benefits of the lower operational costs of e-buses. Longer contracting terms could enable deal structures that facilitate a greater contribution from e-bus operational savings (e.g., fuel, maintenance) against their higher upfront costs. A permissive policy environment for contracts longer than five years can contribute toward school districts securing cost-neutral e-bus bids, once finite grant funds are factored in.

With regard to fueling infrastructure, electric vehicle service equipment ("EVSE") represents an additional possible cost. However separate public policies are available to defray these costs,[7] and the Green Bank, per its statutory authority, can provide financing for such vehicles if the economics are realizable at 10 years and beyond.

There are substantial public health and environmental benefits to reducing mobile-source emissions in school buses. Societal health benefits further magnify when 1) the benefitted populations include vulnerable populations including minors and seniors; and 2) deployment occurs in communities already bearing the brunt of transportation-related air pollution like nitrogen oxide (NOX) and diesel soot (PM2). For instance, in congested urban areas, transportation air pollution can be up to eight times worse on one end of a city block versus the other, increasing elderly heart attack risk by up to 40%.[8] Historically disadvantaged and

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[4] https://portal.ct.gov/DEEP/News-Releases/News-Releases---2021/DEEP-Announces-Award-of-over-12M-in-VW-Settlement-For-43-Electric-School-Buses-in-EJ-Communities

[5] A variety of funding sources are available to support e-bus purchases, including awards from the VW Mitigation Settlement and the Diesel Emission Reduction Act, and the $5 billion Clean School Bus Program recently created through the U.S. Infrastructure Investment and Jobs Act ("IIJA") whose award prioritization includes rural and environmental justice communities.

[6] World Resources Institute modeling using Atlas Public Policy Fleet Procurement Analysis Tool

[7] Public Utilities Regulatory Authority Docket Nos. 17-12-03(RE04) and 21-08-06 final decisions authorize the state's regulated electric distribution companies to incent EVSE for customers on a variety of property types. Although possibly applicable for school bus use, this program is expected to be followed by an exploration on medium-heavy duty vehicle segment charging requirements. Federal IIJA resources may become available to compliment or supplant use of electric ratepayer capital. https://portal.ct.gov/pura/electric/office-of-utility-programs-and-initiatives/clean-energy-programs/electric-vehicle-charging-program

[8] https://www.edf.org/media/new-study-reveals-large-and-unequal-health-burden-air-pollution-californias-bay-area and https://ehp.niehs.nih.gov/doi/10.1289/EHP7679

environmental justice communities would be key beneficiaries of efforts to lessen transportation air pollution.

Please find attached to this testimony the Green Bank's Decennial Societal Impact Report.

Questions on this document may be submitted to Matt Macunas, Legislative Liaison and Associate Director of Regulatory Policy, reachable at matt.macunas@ctgreenbank.com or at (860) 257-2889.

Appendix A: Registered School Buses by Municipality as of September 30, 2021

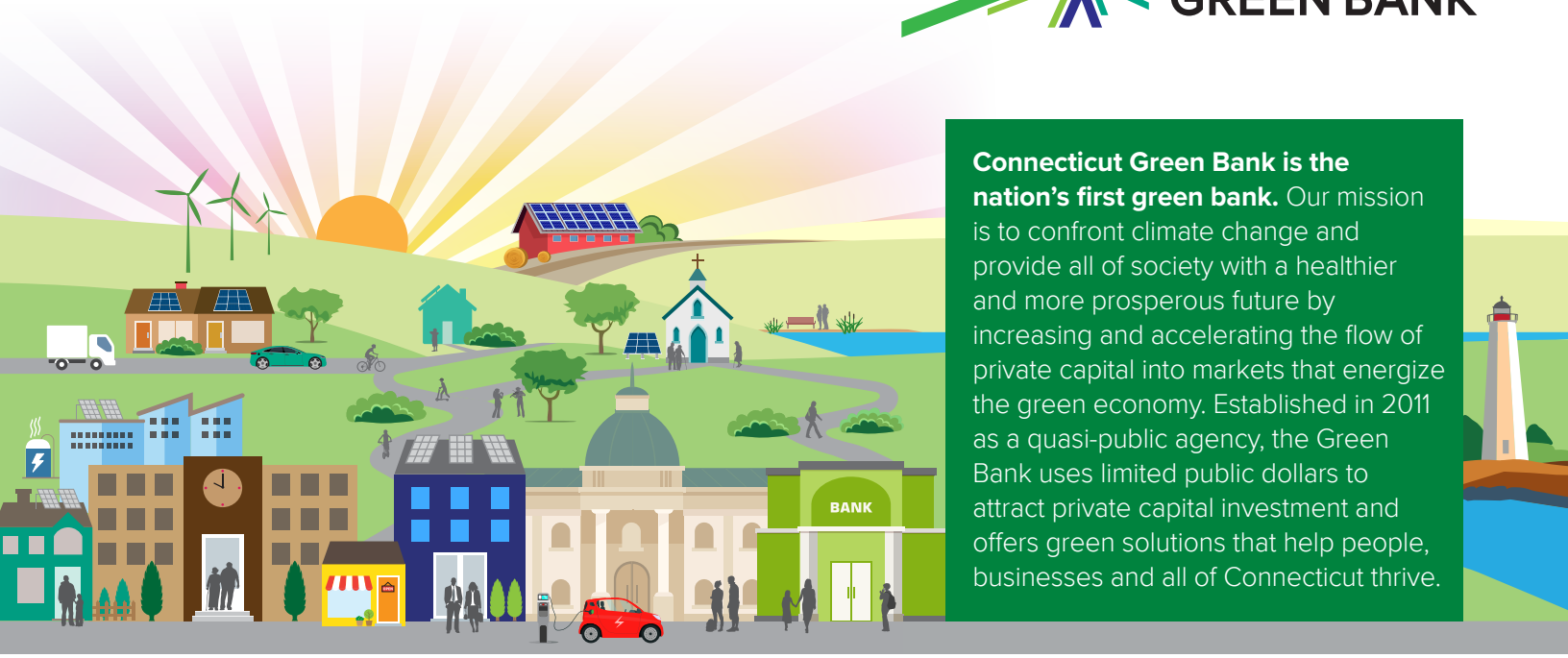
Source: DMV registration data compiled by DEEP

Note: This appendix does not depict retirement schedules within these fleets, which will vary. Although these counts generally correspond to population, we anticipate that the presence of regional bus depots and staging areas account for non-corresponding bus counts.

Row Labels	Count of VehicleVIN
ANDOVER	7
ANSONIA	19
ASHFORD	10
AVON	12
BARKHAMSTED	15
BERLIN	96
BETHANY	91
BETHEL	63
BETHLEHEM	8
BLOOMFIELD	99
BOLTON	3
BOZRAH	4
BRANFORD	35
BRIDGEPORT	283
BRISTOL	51
BROOKFIELD	38
CANAAN	2
CANTERBURY	13
CANTON	19
CHESHIRE	57
CHESTER	19
CLINTON	11
COLCHESTER	12
COLEBROOK	3
COLUMBIA	7
CORNWALL	3
COVENTRY	18
CROMWELL	20
DANBURY	122
DARIEN	1
DURHAM	28
EAST GRANBY	2
EAST HADDAM	20
EAST HAMPTON	22
EAST HARTFORD	425
EAST HAVEN	44
EAST WINDSOR	20
EASTFORD	2
ELLINGTON	2
ENFIELD	105
FAIRFIELD	162
FARMINGTON	31
FRANKLIN	4
GLASTONBURY	93
GOSHEN	1
GRANBY	29
GREENWICH	133
GRISWOLD	43
GROTON	76
GUILFORD	39
HADDAM	39
HAMDEN	117
HAMPTON	66
HARTFORD	221
HARWINTON	36
HEBRON	21
KENT	4
KILLINGLY	38
LEBANON	15
LEDYARD	24
LISBON	11
LITCHFIELD	28
MADISON	46
MANCHESTER	75
MANSFIELD	20
MARLBOROUGH	10
MERIDEN	100
MIDDLEBURY	356
MIDDLETOWN	77
MILFORD	91

MONROE	37
MONTVILLE	28
MORRIS	1
NAUGATUCK	53
NEW BRITAIN	105
NEW CANAAN	55
NEW FAIRFIELD	10
NEW HARTFORD	16
NEW HAVEN	251
NEW LONDON	11
NEW MILFORD	69
NEWINGTON	65
NEWTOWN	61
NORFOLK	4
NORTH BRANFORD	33
NORTH CANAAN	4
NORTH HAVEN	41
NORTH STONINGTON	8
NORWALK	138
NORWICH	14
NOT APPLICABLE	56
OLD LYME	6
OLD SAYBROOK	243
ORANGE	94
OXFORD	25
PLAINFIELD	40
PLAINVILLE	50
PLYMOUTH	33
POMFRET	7
PORTLAND	4
PRESTON	17
PROSPECT	39
PUTNAM	18
RIDGEFIELD	51
ROCKY HILL	110
SALEM	11
SALISBURY	17
SCOTLAND	10
SEYMOUR	56
SHARON	4
SHELTON	7
SHERMAN	6
SIMSBURY	41
SOMERS	14
SOUTH WINDSOR	143
SOUTHINGTON	82
SPRAGUE	5
STAFFORD	26
STAMFORD	676
STERLING	13
STONINGTON	9
STRATFORD	69
SUFFIELD	4
THOMASTON	16
THOMPSON	17
TOLLAND	33
TORRINGTON	62
TRUMBULL	93
VERNON	31
VOLUNTOWN	8
WALLINGFORD	82
WARREN	2
WASHINGTON	23
WATERBURY	222
WATERFORD	37
WATERTOWN	8
WEST HARTFORD	52
WEST HAVEN	11
WESTBROOK	1
WESTON	35
WESTPORT	66
WILLINGTON	15
WILTON	46
WINCHESTER	16
WINDHAM	37
WINDSOR	67
WINDSOR LOCKS	22
WOLCOTT	37
WOODBRIDGE	9
WOODBURY	18
WOODSTOCK	23
Grand Total	**7896**

CONNECTICUT GREEN BANK

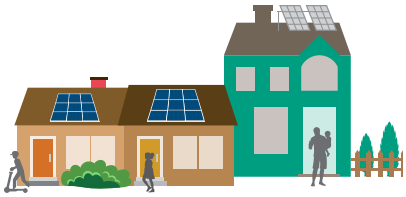


Connecticut Green Bank is the nation's first green bank. Our mission is to confront climate change and provide all of society with a healthier and more prosperous future by increasing and accelerating the flow of private capital into markets that energize the green economy. Established in 2011 as a quasi-public agency, the Green Bank uses limited public dollars to attract private capital investment and offers green solutions that help people, businesses and all of Connecticut thrive.

our solutions

The Green Bank is helping Connecticut flourish by offering green solutions for homes and buildings, and by creating innovative ways to invest in the green economy.

CONNECTICUT GREEN BANK HOME SOLUTIONS



homes

Empowering all Connecticut families and households with accessible and affordable green solutions that bring them comfort and security. Find incentives for battery storage or use the Green Bank's flexible financing to reduce costs with health and safety improvements and the newest energy efficient technologies.

CONNECTICUT GREEN BANK BUILDING SOLUTIONS

buildings

Creating stronger, more resilient communities with green solutions for buildings of all types, from businesses and nonprofits to multifamily housing and local government. Leverage Green Bank financing to save money and realize the benefits of more modern, sustainable buildings.

CONNECTICUT GREEN BANK INVESTMENT SOLUTIONS

investments

Securing a healthier planet with smart ways for individuals and businesses to invest in green solutions – and our future – while also earning a return. Energize the green economy by investing in it today. Buy a Green Liberty Bond, invest through a crowdfunding offering, or join the movement by finding other ways to invest.

Get Started. Call 860.563.0015 or visit ctgreenbank.com

08-21

CONNECTICUT GREEN BANK

Decennial Societal Impact Report

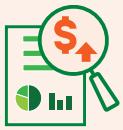
FY12 FY21

Since the Connecticut Green Bank's inception through the bipartisan legislation in July 2011, we have mobilized more than **$2.14 billion of investment** into the State's green economy. To do this, we used **$288.4 million** in Green Bank dollars to attract $1.85 billion in private investment, a leverage ratio of **$7.40 for every $1**. The impact of our deployment of renewable energy and energy efficiency to families, businesses, and our communities is shown in terms of economic development, environmental protection, equity, and energy (data from FY 2012 through FY 2021).

ECONOMIC DEVELOPMENT

JOBS The Green Bank has supported the creation of more than **25,612** direct, indirect, and induced job-years.

TAX REVENUES
The Green Bank's activities have helped generate an estimated **$107.4** million in state tax revenues.



$52.8 million individual income tax

$27.5 million corporate taxes

$27.1 million sales taxes

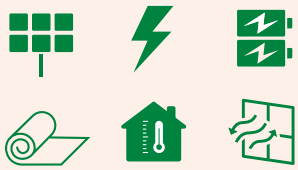
ENERGY

ENERGY BURDEN
The Green Bank has reduced the energy costs on families, businesses, and our communities.

57,000+ families

6,000+ businesses

DEPLOYMENT
The Green Bank has accelerated the growth of renewable energy to more than **494 MW** and lifetime savings of over **64.1 million MMBTUs** through energy efficiency projects.



ENVIRONMENTAL PROTECTION

POLLUTION The Green Bank has helped reduce air emissions that cause climate change and worsen public health, including **9.3** million pounds of SOx and **10.7** million pounds of NOx.

9.9 MILLION tons of CO_2 : EQUALS

163 MILLION tree seedlings grown for 10 years

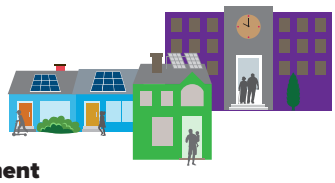
OR

2.1 MILLION passenger vehicles driven for one year

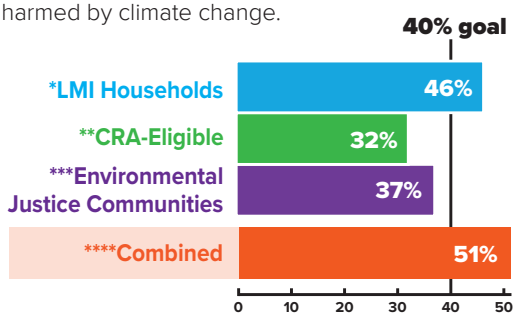
PUBLIC HEALTH The Green Bank has improved the lives of families, helping them avoid sick days, hospital visits, and even death.

$298.1 – $674.1 million of lifetime public health value created

EQUITY



INVESTING in vulnerable communities, The Green Bank has set **goals** to reach **40% investment** in communities that may be disproportionately harmed by climate change.



*LMI Households – households at or below 100% Area Median Income.

**Community Reinvestment Act (CRA) Eligible – households at or below 80% of Area Median Income and all projects in programs designed to assist LMI customers.

***Environmental Justice Community means a municipality that has been designated as distressed by Connecticut Department of Economic and Community Development (DECD) or a census block group for which 30% or more of the population have an income below 200% of the federal poverty level.

****Combined Vulnerable Communities include LMI, CRA and EJC.

Learn more by visiting ctgreenbank.com/strategy-impact/impact

Winner of the 2017 Harvard Kennedy School Ash Center Award for Innovation in American Government, the Connecticut Green Bank is the nation's first green bank.

Sources: Connecticut Green Bank Annual Comprehensive Financial Reports.